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Electric Vehicle Charging Safety Guidelines

Part 3: Electric vehicle supply equipment – New Zealand specific requirements, Edition 2.0 DRAFT

~~incorporating amendment 1~~

1 Application

1.1 This Part 3 of the Electric Vehicle Charging Safety Guidelines applies to electric vehicle supply equipment (EVSE).

2 Introduction

2.1 The Electric Vehicle Charging Safety Guidelines provide guidance for the safe selection and installation of EVSE consistent with New Zealand's electricity supply systems and infrastructure. They are intended to enable suppliers, installers and users to comply with fundamental safety requirements of the Electricity (Safety) Regulations 2010 and do not remove any obligation to comply with those regulations.

2.2 Part 3 of these Guidelines provides specific guidance, safe specification, supply, installation and use of In Cord–Control and Protection Devices (IC-CPD) for charging electric vehicles (EVs), supply cables and Mode 1 charging, EV adaptors, UL certification, SDoC and modification of IC-CPD and charging stations.

2.3 Part 3 of the Guidelines is intended to be read in conjunction with the *Electric Vehicle Charging Safety Guidelines* Parts 1 and 2, and with the Electricity (Safety) Regulations 2010. Refer to Part 1 for interpretation, terms and definitions, references and bibliography.

~~2.4 This guide incorporates amendment 1. Amendment 1 is to alter the final date of use for IEC 61851-1 so that product that would be otherwise safe and compliant is still able to be sold in New Zealand in compliance with these guidelines.~~

~~2.5 Amendment 1 is not intended to replace the review of the guidelines indicated at initial publication.~~

3 Scope

3.1 The specific guidance in Part 3 of these Guidelines applies to all In Cord–Control and Protection Devices (IC-CPD) and supply cables specified, supplied or used for charging electric vehicles (EVs), as well as Mode 1 charging EV

adaptors, UL certification, SDoC and modification of IC-CPD and charging stations..

4 Interpretation – terms and definitions

4.1 The interpretation, terms and definitions stated in Part 1 of these Guidelines, apply to this Part.

4.2 See Part 1 of these Guidelines for references and bibliography.

5 Specification of In Cord–Control and Protection Devices

5.1 No person shall supply an IC-CPD that does not comply with:

(a) IEC 62752; OR

(b) until 1 December 2019, IEC 61851-1 in conjunction with IEC 62196; OR

(c) be certified by UL in compliance with UL ~~2202~~ 2251 for operation when supplied at 230 V/400 V 50 Hertz ac with 230 V to earth.

NOTE: Additional suitable standards may be added at a later date.

5.2 No person may supply an IC-CPD unless it is rated and labelled to operate at a voltage of 230/400 V, 50 Hertz a.c.

5.3 In any case, no IC-CPD may have an inlet supply cord length greater than 2 m.

6 Presence of water

Where an IC-CPD is intended to be used outdoors or in a damp location, it must be selected with a degree of protection of at least IPX4 in accordance with AS 60529.

7 Inlet connection for an IC-CPD

An IC-CPD inlet connection must be one of the following:

(a) A plug compliant with AS/NZS 3112 rated at 10 A with an IC-CPD which either:

(i) restricts the maximum current to 8 A; OR

(ii) restricts the maximum current to 10 A and uses temperature sensing on the pins of the plug to limit the temperature of the pins to safe levels specified by the manufacturer of the plug.

(b) A plug compliant with IEC 60309 rated at 16 A with an IC-CPD which either:

(i) restricts the maximum current to 12 A; OR

(ii) restricts the maximum current to 16 A and uses temperature sensing on the pins of the plug to limit the temperature of the pins to safe levels specified by the manufacturer of the plug.

(c) A plug compliant with AS/NZS 3123 rated at 20 A with an IC-CPD which either:

(i) restricts the maximum current to 16 A; OR

(ii) restricts the maximum current to 20 A and uses temperature sensing on the pins of the plug to limit the temperature of the pins to safe levels specified by the manufacturer of the plug.

(d) A plug compliant with BS 1363-1 rated at 13 A with an IC-CPD which:

(i) restricts the maximum current to 10 A; AND

(ii) was originally designed by the manufacturer of the IC-CPD for use in the British market; AND

(iii) had the plug originally fitted by the manufacturer of the IC-CPD.

For the avoidance of doubt, this clause does not allow the modification of an IC-CPD to fit a plug compliant with BS 1363-1 or the installation or replacement of a plug compliant with BS 1363-1.

~~(d)~~(e) A plug compliant with any other relevant IEC standard rated for continuous duty, where the IC-CPD restricts the maximum current to not more than the rating of the plug and, in any case, no more than 32 A.

7.1 Any IC-CPD that permits the user to adjust the maximum current must be fitted with a plug rated for the highest adjustable current in compliance with Part 3 – 5.5 of these Guidelines.

7.2 No person may supply or use any other plug for the inlet connection of an IC-CPD.

~~7.2~~7.3 ~~No~~ No person may supply or use an adaptor for the plug for the inlet connection of an IC-CPD.

~~7.3~~7.4 No person may supply or use an EV adaptor for an IC-CPD that is not approved by the manufacturer of the IC-CPD for use with that IC-CPD.

8 Limit on supply

An IC-CPD must not be used to supply more than one EV at a time.

9 Specification of supply leads

9.1 No person may supply a supply lead that does not comply with:

(a) IEC 61851-1 in conjunction with IEC 62196-1; OR

(b) be certified by UL in compliance with UL 2202 or UL 2251 for operation when supplied at 230 V/400 V 50 Hertz a.c with 230 V to earth.

NOTE: Additional suitable standards may be added at a later date.

9.2 Presence of water

Where a supply lead is intended to be used outdoors or in a damp location, it must be selected with a degree of protection of at least IPX4 in accordance with AS 60529.

9.3 Labelling requirements

No person may supply an a.c. supply lead unless it is rated and labelled by the manufacturer to operate at a voltage of 230/400 V, 50 Hertz a.c.

No person may supply an a.c. supply lead unless it is rated and labelled to operate at a current at or above its intended operating current.

No person may supply a d.c. supply lead unless it is rated and labelled to operate at a voltage and current at or above its intended operating voltage and current.

10 Specification of adaptors

10.1 Vehicle adaptors shall not be used to connect a vehicle connector to a vehicle inlet.

10.2 Adaptors between the EV socket-outlet and the EV plug shall only be used if specifically designated and approved by the vehicle manufacturer and by the EV supply equipment manufacturer.

10.3 Such adaptors shall comply with the requirements of IEC 61851:2017, and the other relevant standards governing either the EV plug or EV socket-outlet portions of the adaptor. The adaptors shall be marked to indicate the specific conditions of use allowed by the manufacturer.

10.4 Such adaptors shall not allow transitions from one mode to another.

NOTE: IEC 61851-1 ED 2.0 did not allow the use of adaptors.

~~10~~11 Mode 1 charging

~~10.1~~11.1 No person may supply equipment for Mode 1 charging that does not comply with IEC 61851-1:2010 in conjunction with IEC 62196-1.

NOTE: UL standards cannot be used as Mode 1 charging is specifically prohibited by United States national codes.

~~10.2~~11.2 Limit on use

Mode 1 charging is only permitted for use in domestic or similar installations.

In New Zealand it is not permitted to use or allow the use of Mode 1 charging in locations that are not domestic or similar.

~~10.3~~11.3 Supply cable requirements

All supply cables intended for Mode 1 supply must contain a Type 1 10 mA RCD within 300 mm of the inlet plug to the supply cable.

EV supply equipment intended for Mode 1 charging shall provide a protective earthing conductor from the standard plug to the vehicle connector.

~~10.4~~11.4 A Mode 1 supply lead inlet connection must be a plug compliant with AS/NZS 3112 rated at 10 A and the EV must either:

(a) restrict the maximum current to 8 A, or

(b) restrict the maximum current to 10 A and use temperature sensing on the pins of the plug to limit the temperature of the pins to safe levels specified by the manufacturer of the plug.

~~10.5~~11.5 No person may supply or use any other plug for the inlet connection of a supply lead for Mode 1 charging.

~~10.6~~11.6 No person may:

(a) supply a supply lead for Mode 1 charging with an adaptor, or

(b) supply an adaptor for a supply lead for Mode 1 charging

(c) use an adaptor with a supply lead for Mode 1 charging

12 Modification of IC-CPD and Charging Stations

12.1 These guidelines allows modification of an IC-CPD, AC charging station or DC charging station in two ways:

1. ~~1.~~ Modification and relabelling of the IC-CPD in accordance with manufacturer's instructions, with

    - the provision of an SDoC that relies on the original test report and the manufacturer's modification instructions; and
    - a copy of the approval of the plug, for an IC-CPD; and
    - a copy of the approval of any RCD, if applicable; and
    - copies of all these documents, and any other document to be supplied to WorkSafe on request.

2. Type testing to be conducted on the modified and relabelled product as if it was a new item, with

    - the provision of an SDoC that relies on the test report from the type

testing; and

- a copy of the approval of the plug, for an IC-CPD; and.
- a copy of the approval of any RCD, if applicable; and
- copies of all these documents, and any other document to be supplied to WorkSafe on request.

12.2 To avoid doubt:

(a) an IC-CPD and an EV charging station are considered to be a fitting, not an appliance, so the provisions of Regulation 80(3) of the Electricity (Safety) Regulations 2010 do not apply.

(b) the testing referenced in AS/NZS 3760 cannot be applied to EVSE, including an IC-CPD and a charging station.

13 UL Certification – information on use in New Zealand

13.1 Any supplier of EVSE that has gained UL certification for their products must also obtain a letter from UL specifying that the product was tested during the certification and quality control process, and was originally designed to work on 230/400 V, 50 HZ and 230 V to earth.

13.2 These Guidelines do not recognise a test report to UL standards.

14 Filling out an SDoC

14.1 To be compliant with these Guidelines SDoC should refer to the following:

- AS/NZS 3820
- IEC 62196-1 :2011
- The test report for the product
- Any approvals for a plug or RCD
- Any further test reports from the test laboratory that identify the product as being the same product as that mentioned on the test report.

14.2 WorkSafe considers that compliance with these Guidelines in full means that compliance with AS/NZS 3820 has been obtained, in so much that the requirements of the guide relates to a fitting.

15 Identification of plug approvals

15.1 All SDoC should reference the approval for the plug used on an IC-CPD.

15.2 The product may need to undergo further type testing if the original plug is removed or replaced for another of a different type. This is especially important if temperature sensing on the plug is removed or added.

Note: Plugs are not lawful for sale or supply in New Zealand without an

approval.

16 Identification of RCD approvals

16.1 All SDoC should reference the approval of the RCD on the SDoC, if an RCD is contained with or within the product.

16.2 The product may need to undergo further type testing if any RCD is removed or replaced for another RCD or RCBO.

Note: RCDs are not lawful for sale or supply in New Zealand without an approval.

17 Test Reports

17.1 For compliance with these Guidelines, a test report must be issued by a test laboratory that is accredited or approved in accordance with Regulation 81 of the Electricity (Safety) Regulations 2010.

17.2 Test reports must identify the model number and a photo of the product that is intended for sale or supply.

17.3 Product must have the model number printed on it that is the same as the test report.

17.4 The photo in the test report must feature the product that is intended for sale or supply.

~~10.7~~17.5 Should there be a reason for marking the product different to that in the test report, a further test report must be obtained from the test laboratory that identifies the product as being the same as the one that was originally tested.

Appendix A: Example SDoC

SDoC Identification Number[1]: Insert a number here that means something to your company

Issuer details

Name[2] (of New Zealand manufacturer or importer)**:**

Name of NZ manufacturer or importer

Telephone: Number

New Zealand Company No. (if applicable): Companies number

Email Address: Email address

Contact Address:

Full address for service (the same as the companies office)

Medium Risk Article – Details[3] (Product name, type, rating, brand, model, batch numbers, and serial numbers, as applicable):

Product Name
Model number of product
Type of product
Electrical rating of product V and Hz
Batch numbers
Serial numbers
any other identifying features
There is no objection to inserting a representative photo here

The Medium Risk Article listed above, fully complies:

With cited standard(s), as listed[4]:

Standard number and issue year: AS/NZS 3820: year

Edition / Amendment status: Amendment version

Standard title: Name of standard here (MUST use the version cited in schedule 4 of the Electricity (Safety) Regulations 2010).

AS/NZS ZZ modified Yes ☐ No ☒ N/A ☐

Standard number and issue year: IEC 62196-1

Edition / Amendment status: ED 2.0

Standard title: Name of standard here (MUST use the version cited in schedule 4 of the Electricity (Safety) Regulations 2010).

AS/NZS ZZ modified Yes ☐ No ☒ N/A ☐

OR Complies with the Conformity Cooperation Agreement[5] Yes ☐ No ☒

Names and addresses of any testing organisation or body

Name(s): Name of accredited test lab

Address(es): Address of accredited test lab

Name(s): Name of accredited test lab (if applicable for a second lab)

Address(es): Address of accredited test lab (if applicable for a second lab)

Reference to relevant test reports/certification and the issue date that show how compliance is achieved

Standard(s) or document(s) used, to show how compliance with cited standard is achieved:	Report Certification or Document reference N°(s):	Issue dates(s):
Standard for product testing	Test report number	Date
Standard for RCD testing (if applicable)	Approval number	Date
Standard for plug approval (if applicable)	Approval number	Date
Test report identifying any difference in model number	Test report number	Date
Test report identifying compliance with AS/NZS 3820 (if not using these Guidelines)	Test report number	Date

Reference to any management quality system involved: If there is one name it here

Additional information[6]: If device complies with these Guidelines, and therefore AS/NZS 3820, state it here.

Declaration (signed for and on behalf of)

Name and position as authorized by the issuer[7]:

Your name and position

Issuer Identification (as affixed to the article):

Your logo that is on device

Signature:

Sign here (not valid without signature)

Date:

Date you signed this